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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/830,026	04/23/2004	Harold Boll	91505/MGB	7504
1333	7590	10/30/2007	EXAMINER KAU, STEVEN Y	
EASTMAN KODAK COMPANY PATENT LEGAL STAFF 343 STATE STREET ROCHESTER, NY 14650-2201			ART UNIT 2625	PAPER NUMBER
		MAIL DATE 10/30/2007	DELIVERY MODE PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/830,026	BOLL, HAROLD	
	<b>Examiner</b>	<b>Art Unit</b>	
	Steven Kau	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 23 April 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-25 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-25 is/are rejected.
- 7) Claim(s) 14 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 4/23/2004 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/13/2004, 6/16/2005</u>                                      | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on June 16, 2005 and July 13, 2004 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Objections***

2. Claim 14 is objected to because of the following informalities: Claim 14, recites, "A method according to claim 1, comprising: establishing a lightness range for each of the of the mapped set of inkvectors in said color space; identifying a subset of the mapped inkvectors that have an intersection with a plane of constant lightness; establishing a set of nodes in color space corresponding to said intersection; and selecting a subset of the set of nodes that define boundaries of the color gamut" (Emphasis added). The underlined words "of the of the" should be replaced with "of the". Appropriate correction is required.

### ***Duplicate Claim***

3. Applicant is advised that should claim 24 be found allowable, claim 25 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing

one claim to object to the other as being a substantial duplicate of the allowed claim.

See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 18 and 19, the word "means" is preceded by the word(s) "establishing", "generating", "using" and "selecting" in Claim 18, and "identifying" in Claim 19, in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Applicant invokes 112 6<sup>th</sup> in claims 18-19. However, applicant's disclosure does not provide any detail structural information for the means-plus function. Without defining the structure for means-plus functions, one skilled in the art would not be able to understand what structure will perform for the recited function. Therefore any means that perform the equivalent functionality will be reasonable utilized by one of ordinary skill in the art. See MPEP Section 2181.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 8, 15-20, 22 and 24-25 rejected under 35 U.S.C. 102(b) as being anticipated by Braun et al (Braun) (US 7,239,422).

Regarding **claim 1**, Braun discloses color mapping using a cost function, in that he teaches a method for constructing a color gamut for a plurality of colorants used in a color image reproduction system (Fig 8, a complete color gamut boundary for a CMYK inkjet printer, col 11, lines 5-15), comprising the steps of: establishing a forward model (Fig. 3, col 6, lines 25-29) for the color image reproduction system (e.g. an inkjet printer), the forward model characterizing the correspondence between combinations of the plurality of colorants (e.g. CMYK) and resulting colors (e.g. color in device independent color space, Fig. 3, col 6, lines 60-63) in color space (e.g. One way is to use the known spectral characteristics of the inks with color mixing equations to predict the output color without actually printing it. col 6, lines 25-45); generating a set of inkvectors (e.g. colorant control signal vectors) defining combinations of colorants in colorant space (e.g. determining a set of DDCS candidate colorant control signal vectors consists of first mapping the DICS points of the complete color gamut boundary into the gamut of the color imaging device by different amounts. Col 7, lines 17-28);

using the forward model to map the set of inkvectors into said color space (e.g. mapping the set of device dependent color space colorant control signal vectors (inkvectors) with device independent color space, col 6, lines 66 through col 7, line 28); and selecting a subset (e.g. defining points 1 and 5 of Fig 4 to redefine a boundary) of the mapped set of inkvectors that define boundaries of the color gamut (Figs 4 & 9, col 29-36 and col 11, lines 17-31).

Regarding **claim 2**, Braun discloses a further step of identifying at least one color in a color image to be reproduced that is outside the boundaries of the color gamut (col 11, lines 32-52).

Regarding **claim 3**, Braun discloses that mapping the at least one identified color to produce a color that is on or inside the boundaries of the color gamut (col 11, lines 32-52).

Regarding **claim 4**, Braun discloses a further step of reproducing the color image on the color image reproduction system (e.g. an inkjet printer, col 6, lines 13-24).

Regarding **claim 8**, Braun discloses wherein the colorants comprise printing inks (col 6, lines 19-21).

Regarding **claim 15**, Braun discloses wherein the plurality of colorants comprise at least three colorants (col 6, lines 25-45).

Regarding **claim 16**, Braun discloses wherein the plurality of colorants comprise less than eight colorants (col 6, lines 25-45).

Regarding **claim 17**, Braun discloses a general purpose computer processor configured to perform the method of claim 1 (col 11, lines 53-63).

Regarding **claim 18**, recites identical features as claim 1, except claim 18 is a system claim. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 18.

Regarding **claim 19**, recites identical features as claim 2, except claim 19 is a system claim. Thus, arguments similar to that presented above for claim 2 are also equally applicable to claim 19.

Regarding **claim 20**, Braun discloses wherein the output device comprises an inkjet printer and the colorants are inkjet printing fluids (col 6, lines 20-21).

Regarding **claim 22**, Braun discloses wherein the output device comprises a printing press and the colorants are printing inks (col 6, lines 20-21).

Regarding **claim 24**, recites identical features as claim 1, except claim 24 is a computer program product claim. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 24.

Regarding **claim 25**, recites identical features as claim 1, except claim 25 is a computer readable medium claim. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 25.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 5 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (Braun) (US 7,239,422) in view of Huang et al (Huang) (US 5,652,831).

Regarding **claim 5**, Braun differs from claim 5, in that he does not expressly teach wherein establishing the forward model comprises: generating a plurality of test patches on a medium, each test patch corresponding to a specific combination of colorants; measuring a color value for of each of the test patches; and fitting the color values to a suitable basis function.

Huang discloses generating a plurality of test patches on a medium, each test patch corresponding to a specific combination of colorants (col 6, lines 65 through col 7, line 10); measuring a color value for of each of the test patches (Fig. 8a, col 7, lines 5-15); and fitting the color values to a suitable basis function (e.g. performing a local polynomial regression analysis, Fig. 8a, col 7, lines 5-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Braun to include that generating a plurality of test patches on a medium, each test patch corresponding to a specific combination of colorants; measuring a color value for of each of the test patches; and fitting the color values to a suitable basis function taught by Huang to improve computation accuracy and speed (col 2, lines 60 through col 3, line 3).

Regarding **claim 23**, recites identical features as claim 5, except claim 23 is a system claim. Thus, arguments similar to that presented above for claim 5 are also equally applicable to claim 23.

9. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (Braun) (US 7,239,422) in view of Huang et al (Huang) (US 5,652,831) as applied to claim 5 above, and further in view of Castelli et al (Castelli) (US 5,748,221).

Regarding **claim 6**, Braun differs from claim 6, in that he does not teach wherein the color value is measured using a spectrophotometer.

Castelli discloses wherein the color value is measured using a spectrophotometer (col 6, lines 61 through col 7, line 12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Braun to include that the color value is measured using a spectrophotometer taught by Castelli because the corresponding results obtained from spectrophotometer are then used to create a mapping between the sensor's RGB space to CIELAB color space for patch evaluation for the specific toners (col 7, 5-10).

Regarding **claim 7**, Braun differs from claim 7, in that he does not expressly teach that the color value is measured in CIELAB color space.

Castelli discloses wherein the color value is measured in CIELAB color space (col 6, lines 61 through col 7, line 12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Braun to include that the color value is measured in CIELAB color space taught by Castelli because the corresponding results obtained

from spectrophotometer are then used to create a mapping between the sensor's RGB space to CIELAB color space for patch evaluation for the specific toners (col 7, 5-10).

10. Claims 9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (Braun) (US 7,239,422) in view of Ciccarelli et al (Ciccarelli) (US 5,591,552).

Regarding **claim 9**, Braun differs from claim 9, in that he does not expressly teach wherein the colorants comprise xerographic toners.

Ciccarelli discloses wherein the colorants comprise xerographic toners (col 2, lines 3-15 & col 11, lines 13-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Braun to include that the colorants comprise xerographic toners taught by Ciccarelli because of excellent stable triboelectric characteristics, acceptable stable admix properties and superior color resolution (col 1, lines 45-53).

Regarding **claim 21**, recites identical features as claim 9, except claim 21 is a system claim. Thus, arguments similar to that presented above for claim 9 are also equally applicable to claim 21.

11. Claims 10, 11, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (Braun) (US 7,239,422) in view of Mahy (US 5,872,898).

Regarding **claim 10**, Braun differs from claim 10, in that he does not expressly teach wherein each inkvector comprises two colorants that are allowed to vary freely

between their respective minimum and maximum values, the remaining colorants being fixed at one of a maximum or a minimum value.

Mahy discloses wherein each inkvector comprises two colorants that are allowed to vary freely between their respective minimum and maximum values, the remaining colorants being fixed at one of a maximum or a minimum value (col 2, lines 4-29 & col 9, lines 62 through col 10, line 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Braun to include that each inkvector comprises two colorants that are allowed to vary freely between their respective minimum and maximum values, the remaining colorants being fixed at one of a maximum or a minimum value taught by Mahy and therefore, the physical boundaries is introduced to indicate that these boundaries correspond to the physical limitations on the amounts of ink that can be printed (col 10, lines 1-4).

Regarding **claim 11**, Braun teaches wherein the set of inkvectors comprise all possible combinations of the plurality of colorants (col 5, lines 35-40).

Regarding **claim 12**, Braun differs from claim 12, in that he does not expressly teach wherein the boundaries of the color gamut are constructed for each of a plurality of planes of constant lightness in said color space.

Mahy discloses wherein the boundaries of the color gamut are constructed for each of a plurality of planes of constant lightness in said color space (col 7, lines 51-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Braun to include that the boundaries of the color

gamut are constructed for each of a plurality of planes of constant lightness in said color space taught by Mahy and therefore, the physical boundaries is introduced to indicate that these boundaries correspond to the physical limitations on the amounts of ink that can be printed (col 10, lines 1-4).

Regarding **claim 13**, Braun differs from claim 13, in that he does not teach wherein a plurality of boundary nodes are identified for each plane of constant lightness, the method further comprising the step of determining a plurality of intervening points between adjacent pairs of the plurality of boundary nodes.

Mahy discloses wherein a plurality of boundary nodes (e.g. points) are identified for each plane of constant lightness (col 7, lines 51-56), the method further comprising the step of determining a plurality of intervening points between adjacent pairs of the plurality of boundary nodes (interpreted: determining a plurality of intervening points between adjacent pairs of the plurality of boundary nodes, is to calculate/evaluate neighboring points between two points of a color gamut boundary. col 4, lines 14-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Braun to include that a plurality of boundary nodes are identified for each plane of constant lightness, the method further comprising the step of determining a plurality of intervening points between adjacent pairs of the plurality of boundary nodes taught by Mahy to determine the color gamut of a printer of colorant limitations (col 6, lines 29-30).

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al (Braun) (US 7,239,422) in view of Spaulding et al (Spaulding) (US 5,539,540).

Regarding to **claim 14**, Braun discloses that establishing a set of nodes (e.g. a line - continuous points) in color space corresponding to said intersection (col 11, lines 45-52); and selecting a subset of the set of nodes that define boundaries of the color gamut (points P1 and A (subset of a set of nodes or points) are used defining a boundary, Fig. 4, col 7, lines 17-36).

Braun differs from claim 14, in that he does not expressly teach that establishing a lightness range for each of the of the mapped set of inkvectors in said color space: identifying a subset of the mapped inkvectors that have an intersection with a plane of constant lightness.

Spaulding discloses that establishing a lightness range (between the saturation and lightness values, col 9, lines 19-21) for each of the of the mapped set of inkvectors in said color space (Fig. 18, col 10, lines 34-45): identifying a subset of the mapped inkvectors that have an intersection with a plane of constant lightness (L=50.0 of Fig. 1 and L=65 of Fig. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Braun to include that establishing a lightness range for each of the of the mapped set of inkvectors in said color space: identifying a subset of the mapped inkvectors that have an intersection with a plane of constant lightness taught by Spaulding to adjust color in a custom manner while maintaining the desired tone in reproduction (col 4, lines 15-20).

***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on M-F, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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